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REMARKS/ARGUMENTS

Claims 1, 2, 4-9, and 11-37 are pending. Claims 3 and 10 have been canceled without prejudice. Claims 1 and 16 have been amended to correct minor informalities. New claims 33-37 have been added. The specification and drawings have been amended to correct minor informalities. No new matter has been introduced. Applicant believes the claims comply with 35 U.S.C. § 112.

Fig. 1 has been amended to remove reference character 11. The specification has been amended to recite the reference characters shown in the drawings. Applicant respectfully requests withdrawal of the objections to the specification and drawings.

Claims 1, 2, 4-9, and 11-32 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite with regard to the recitation of a plurality of electroactive actuator strips. Applicant notes that the electroactive actuator strips are shown as reference character 29 in Fig. 2b and as reference character 39 in Fig. 3, and discussed in the specification at page 11, lines 8-17. These electroactive actuator strips are used to change the curvature of the mirror. The shape retaining elements are different, and are shown as reference character 9 in Fig. 1a and described in the specification at page 8, line 20, to page 11, line 6; and as reference character 41 in Fig. 3, and described in the specification at page 13, line 22, to page 14, line 1. Although the shape-retaining elements are electroactively actuated, they have different arrangements and serve different functions from the electroactive actuator strips used to alter the curvature of the mirror. The shape-retaining elements are used to deploy the mirror and to bias the mirror in a desired position by replying on their shape-retaining abilities.

Accordingly, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 112.

Claims 1, 2, 4, 6-9, 11-15, 19-22, 24, 27, and 29-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Williamson et al. in view of Elliot et al., and Maclean et al. The Examiner recognizes that Williamson et al. does not disclose a plurality of electroactive actuators arranged between the first and second layers and operable to alter the mirror curvature, or electrical connectors cooperating with the actuators, but alleges that Elliot

discloses the use of actuators and that Maclean et al. discloses the use of shape memory alloy tendons that are electrically operated.

Applicant respectfully asserts that independent claim 1 is patentable over the cited references because, for instance, they do not teach or suggest a plurality of electroactive actuator strips arranged between and connected with the first layer and the second layer and operable to alter a curvature of the mirror, and electrical connectors coupled with the electroactive actuator strips and operable to cause the electroactive actuator strips to alter the curvature of the mirror.

Williamson does not teach electroactive actuator strips. Elliott et al. merely discloses actuators to correct the shape of a reflector to a desired shape. Although Maclean et al. discloses electroactive elements, those elements are shape memory alloy tendons 16 embedded in facesheets. "As the tendons 16-1 are reheated by the current, the wires change state to the austenitic phase and tend to become shorter, recovering their original length. As the strain is relieved, surfaces 12 and 13 of Fig. 2 and loads thereon provide a vectoring force to return the control surface 10 to its original shape, as a result of the tendons becoming longer, with the control surface deflection thus being reduced." Column 6, lines 19-26. The shape memory alloy tendons 16 may be more closely related to the shape retaining elements recited in claim 1, but do not suggest the electroactive actuator strips.

Moreover, Applicant believes the rejection based on the combination of Williamson, Elliott et al., and Maclean et al. benefits from the exercise of hindsight. Federal Circuit "case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999) (citations omitted). To guard against the tempting trap of hindsight, the evidence of a suggestion, teaching, or motivation to combine "must be clear and particular." *Dembiczak*, 50 U.S.P.Q.2d at 1617 (citation omitted). "Broad conclusory statements regarding the teaching of multiple references, standing alone, are not `evidence.'" *Id.* (citations omitted). Applicant believes the Examiner has simply pieced together distinct teachings of multiple references based on the present disclosure. "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint

for piecing together the prior art to defeat patentability--the essence of hindsight." *Id.* (citing *Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985)). Just because the various features may be combined together does not constitute evidence of a motivation to combine them. Even if combined, Applicant believes the references do not render claim 1 obvious for the reasons provided above.

For at least the foregoing reasons, claim 1 and claims 2, 4, 6-9, 11-15, 19-22, 24, 27, and 29-32 depending therefrom are patentable.

Claims 1, 2, 4, 6-9, 11-13, 16-22, 24-27, and 29-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Williamson et al. in view of Elliot et al. and Melzer et al. The Examiner alleges that Melzer et al. discloses electrically operated actuators.

Applicant respectfully asserts that independent claim 1 is patentable over the cited references because, for instance, they do not teach or suggest a plurality of electroactive actuator strips arranged between and connected with the first layer and the second layer and operable to alter a curvature of the mirror, and electrical connectors coupled with the electroactive actuator strips and operable to cause the electroactive actuator strips to alter the curvature of the mirror.

Melzer et al. discloses piezoelectric elements 3 bonded onto the rear 2 of the mirror 1 (page 2, ¶ 26), and arranged in a spoked shape (Figs. 7 and 8; page 2, ¶ 31). There is no teaching or suggestion in Melzer et al. or the other references of electroactive actuator strips arranged between and connected with the first and the second layer. In addition, Applicant believes the rejection based on the combination of Williamson, Elliott et al., and Melzer et al. benefits from the exercise of hindsight. Just because the various features may be combined together does not constitute evidence of a motivation to combine them. Even if combined, Applicant believes the references do not render claim 1 obvious for the reasons provided above.

For at least the foregoing reasons, claim 1 and claims 2, 4, 6-9, 11-13, 16-22, 24-27, and 29-32 depending therefrom are patentable.

Claim 5 depends from claim 1 and is rejected under 35 U.S.C. § 103(a) as being unpatentable over Williamson et al. in view of Elliot et al. and Maclean et al., and further in view of Lach et al. Lach et al. is cited for allegedly disclosing the use of Kapton, and does not cure

the deficiencies of the other references. Thus, claim 5 is patentable for at least the reasons that claim 1 is patentable.

Claims 23 and 28 depend from claim 1 and are rejected under 35 U.S.C. § 103(a) as being unpatentable over Williamson et al. in view of Elliot et al. and Maclean et al., and further in view of Plante et al. and Hardy. Plante et la. and hardy are cited for allegedly disclosing correcting for atmospheric aberration and the use of a wavefront sensor, and do not cure the deficiencies of the other references. Thus, claims 23 and 28 are patentable for at least the reasons that claim 1 is patentable.

Claim 5 depends from claim 1 and is rejected under 35 U.S.C. § 103(a) as being unpatentable over Williamson et al. in view of Elliot et al. and Melzer et al., and further in view of Lach et al. Lach et al. is cited for allegedly disclosing the use of Kapton, and does not cure the deficiencies of the other references. Thus, claim 5 is patentable for at least the reasons that claim 1 is patentable.

Claims 14 and 15 depend from claim 1 and are rejected under 35 U.S.C. § 103(a) as being unpatentable over Williamson et al. in view of Elliot et al. and Melzer et al., and further in view of Maclean et al. Maclean et al. is cited for allegedly disclosing the use of a shape memory alloy, and does not cure the deficiencies of the other references. Thus, claims 14 and 15 are patentable for at least the reasons that claim 1 is patentable.

Claims 23 and 28 depend from claim 1 and are rejected under 35 U.S.C. § 103(a) as being unpatentable over Williamson et al. in view of Elliot et al. and Melzer, and further in view of Plante et al. and Hardy. Plante et la. and hardy are cited for allegedly disclosing correcting for atmospheric aberration and the use of a wavefront sensor, and do not cure the deficiencies of the other references. Thus, claims 23 and 28 are patentable for at least the reasons that claim 1 is patentable.

Applicant respectfully submits that new claim 33 is patentable because, for instance, the cited references do not teach or suggest a plurality of electroactive actuator strips arranged between and connected with the first layer and the second layer and operable to alter a curvature of the reflective surface, and electrical connectors coupled with the electroactive

actuator strips and operable to cause the electroactive actuator strips to alter the curvature of the reflective surface.

As discussed above, the references do not suggest the electroactive actuator strips arranged between and connected with the first layer and the second layer and operable to alter a curvature of the reflective surface. For at least these reasons, claim 33 and claims 34 and 35 depending therefrom are patentable.

Applicant respectfully contends that new claim 36 is patentable because, for instance, the cited references do not teach or suggest a plurality of electroactive actuators arranged between and connected with the first layer and the second layer and operable to alter a curvature of the reflective surface. Nor do they suggest a plurality of shape-retaining elements attached to at least one of the first layer and the second layer and electroactively operable to deploy the mirror and to bias the mirror in a desired position.

The leaf springs 52 and ring 56 in Williamson are not electroactive shape retaining elements. The other references are devoid of any suggestion for shape retaining elements electroactively operable to deploy the mirror and to bias the mirror in a desired position. Thus, claim 36 and claim 37 depending therefrom are patentable.

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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